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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,939	09/17/2003	Ali S. Sadri	P16084	6815

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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER	
KARIKARI, KWASI	
ART UNIT	**PAPER NUMBER**
2617	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/665,939	SADRI ET AL.	
	Examiner	Art Unit	
	Kwasi Karikari	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09/17/2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *04/28/06 and 06/16/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 29 October 2003 is in compliance with the provision of 37 CFR 1.97, has been considered by the Examiner, and made of record in the application file.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-21 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter. The claimed subject matter in the instant application fails to define a result in the process that is being claimed.

The Examiner has determined that claims 1,9,17 and 21 fail to provide a practical application that produces a useful, tangible and concrete result. Claims 9 and 21 provides evidence that claim 1 and 17 constitute a computer implemented methods performing the "quantizing", "generating", "parsing" and "dequantizing" steps. Appropriate corrections are required.

Claim Objections

4. Claims 2-8, 10-16, 18-20, 22-24, 26-30 and 32-34 are objected to because of the following informalities:

The Examiner suggests using "The method", "The article", and "The apparatus" in place of "A method", "An article", and "An apparatus" to indicate references been made to previously cited claimed limitations in the independent claims. Appropriate corrections are required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1,3,4,8,9,11,12,16,17,20,21,24,25,27,31 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Kadous et. al., (U.S 20030095508 A1) (hereinafter Kadous).

Regarding claims 1, 9 and 25, Kadous discloses a method/article/apparatus (see Figs. 1A & 3), comprising:

quantizing a channel response function (= frequency response, see Pars. 0024-25 and 0032) of a signal received from a transmitter (transmitter 110, see Fig. 1A); and

generating a channel state information packet (= status of each received packet, see Pars. 0025-26) to be transmitted back to the transmitter wherein the packet includes the quantized channel response function (feedback information to be sent back to the transmitter 110, see Pars. 0021-27).

Regarding claims 3,11 and 27, as recited in claims 1, 9 and 25, Kadous discloses that a method further comprising converting the signal from a frequency domain representation of the signal to a time domain representation of the signal prior to said quantizing (see Par. 0024).

Regarding claims 4 and 12, as recited in claims 1 and 9, Kadous discloses that a method further comprising converting the signal from at least one of a frequency domain representation or a time domain representation to power allocation and modulation type instructions prior to said quantizing (see Par. 0026-27).

Regarding claims 8 and 16, as recited in claims 1 and 9, Kadous discloses that a method, wherein said quantizing includes estimating a time delay attenuation of the channel response function (see Pars. 0023 and 0101-2).

Regarding claims 17, 21 and 31, Kadous discloses a method/article, comprising: parsing a channel state information packet received from a device (receiver 150) after

transmitting a signal to the device to obtain a quantized channel response function of the signal (see Par. 0025); and

dequantizing the quantized channel response function to provide a channel response function (see Pars. 0025-27).

Regarding claims 20, 24 and 34, as recited in claims 17, 21 and 31, Kadous discloses that a method, further comprising, where the channel response function is a time domain representation, converting the time domain representation of the channel response function to a frequency domain representation of the channel response function (see Par. 0025).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2,5,10,13,18,22,26,28 and 32 are rejected under U.S.C. 103(a) as being unpatentable over Kadous in view of Davidsson et al., (U.S 20020101840 A1), (hereinafter Davidsson).

Regarding claims 2 and 10, as recited in claims 1 and 9, Kadous fails specifically to discloses that a method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson a method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claims 5, 13 and 28, as recited in claims 1,9 and 25 Kadous fails specifically to discloses that a method/apparatus further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M, wherein the N complex numbers are limited to values having time delays less than a predetermined delay spread

However, Davidsson a method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M, wherein the N complex numbers are limited to values having time delays less than a predetermined delay spread

(see Pars. 0010-17 and 0054-63)

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claim 18, as recited in claim 17, Kadous fails specifically to discloses that a method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson a method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claims 22 and 32, as recited in claims 21 and 31, Kadous fails specifically to discloses that an article/apparatus further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson a method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

Regarding claim 26 , as recited in claim 25, Kadous fails specifically to discloses that an article/apparatus further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M.

However, Davidsson a method further comprising, where the channel response function is represented by M complex numbers, limiting the channel response function to N complex numbers where N is less than M (see Pars. 0010-17).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davidsson with the system of Kadous for the benefit of achieving a wireless packet system that includes timing drift compensation technique (see Davidsson; Par. 0019-20).

7. **Claims 6,7,14,15,19,23,29, 30 and 33 are rejected under U.S.C. 103(a) as being unpatentable over Kadous in view of He et al., (U.S 20040005010 A1), (hereinafter He).**

Regarding claims 6,14 and 29, as recited in claims 1,9 and 25, Kadous fails to disclose that said calculating includes subtracting a channel estimate from the channel response function to provide a residual value of the channel response function, wherein said quantizing includes quantizing the residual value of the channel response function, and wherein the packet includes a quantized residual value of the channel response function.

However, He teaches said calculating includes subtracting a channel estimate from the channel response function to provide a residual value of the channel response function, wherein said quantizing includes quantizing the residual value of the channel response function, and wherein the packet includes a quantized residual value of the channel response function (see Pars. 0032-39).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of He with the system of Kim for the benefit of achieving a system that includes equalizer for accurately determining the frequency offset between transmitter and the receiver (see He; Par. 0064).

Regarding claims 7,15 and 30, as recited in claims 1,9 and 25, Kadous fails to disclose that a method, wherein said calculating includes subtracting a channel estimate

from the channel response function to provide a residual value of the channel response function, wherein said quantizing includes quantizing the residual value of the channel response function, and wherein the packet includes a quantized residual value of the channel response function.

However, He teaches a method, wherein said calculating includes subtracting a channel estimate from the channel response function to provide a residual value of the channel response function, wherein said quantizing includes quantizing the residual value of the channel response function, and wherein the packet includes a quantized residual value of the channel response function (see Pars. 0032-39).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of He with the system of Kim for the benefit of achieving a system that includes equalizer for accurately determining the frequency offset between transmitter and the receiver (see He; Par. 0064).

Regarding claims 19, 23 and 33, as recited in claims 17, 21 and 31, Kadous fails to disclose that a method/article, where the channel response function of the channel state information packet is represented as a residual of the channel response function, calculating an updated estimate of the channel response function by adding a current estimate of the channel response function to the residual of the channel response function.

However, He teaches a where the channel response function of the channel state information packet is represented as a residual of the channel response function,

calculating an updated estimate of the channel response function by adding a current estimate of the channel response function to the residual of the channel response function (see Pars. 0032-39).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of He with the system of Kim for the benefit of achieving a system that includes equalizer for accurately determining the frequency offset between transmitter and the receiver (see He; Par. 0064).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwasi Karikari whose telephone number is 571-272-8566. The examiner can normally be reached on M-F (8 am - 4pm).
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8566.
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kwasi Karikari
Patent Examiner.

03/28/2007.

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER